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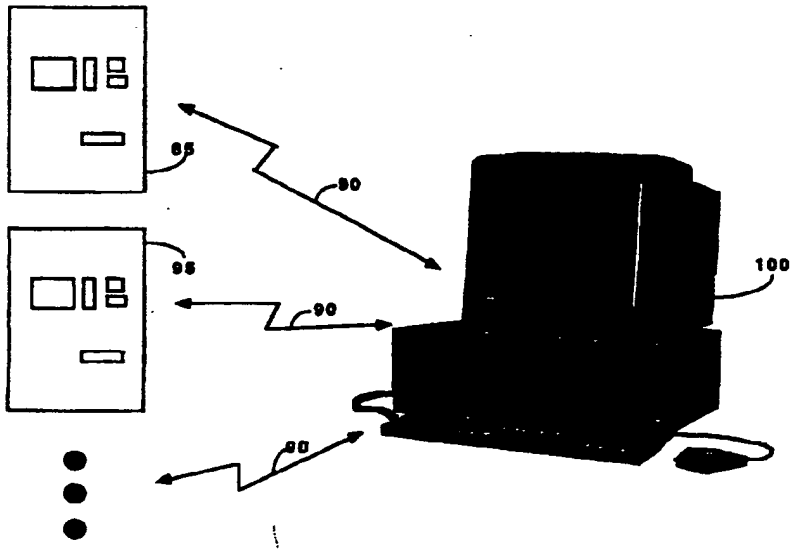

(57) Abstract

The present invention is a network of at least one server and multiple dispensing clients. The clients are dispensing machines electronically linked to the server for dispensing products recorded on storage media. Consumers preview representative segments of items from a graphic user interface before selecting and paying for them via on site electronic banking inputs. Items are dispensed to consumers if they are available from the dispensing machines' inventory. Otherwise, items on order are forwarded to consumers from a central distribution facility. The server also monitors the level of inventory of remote dispensing machines, while ensuring the integrity of the distribution network against breakdown and abuse. The information captured from the dispensing clients are stored by the server.

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ONLINE DISTRIBUTION SYSTEM FOR RECORDED PRODUCTS

FIELD OF THE INVENTION

The present invention relates to system for distributing products in an online manner efficiently. In particular, the present invention pertains to an online system for distributing products recorded on storage media such as magnetic or optical discs and a method for monitoring and controlling such distribution system remotely.

BACKGROUND OF THE INVENTION

Dispensing machines such as those for vending soft drinks and snacks are gaining acceptance among consumers because they offer convenience and 24 hours service. For the suppliers of consumer products, dispensing machines represent another channel for distributing their products cost effectively. Hitherto, most dispensing machines of consumer products are stand alone. In other words, such machines are not controlled centrally. As such, proprietors or their agents have to check physically and periodically to replenish inventory or to repair malfunctioning machines.

Products recorded on storage media such as magnetic or optical disc have traditionally been distributed through specialised retail outlets. By products recorded on storage media, the present invention refers also to publication and media for storing music, recording and movie industries. There is an emerging need among busy consumers to sample, select and purchase such media from non traditional sources such as dispensing machines. Factors which contribute towards new means of distributing media for the recording and movie industries are price, timeliness of contents and hassle free payment facility.

OBJECT OF THE INVENTION

It is an object of the present invention to describe a cost effective system of distributing products recorded on storage media.

It is another object of the present invention to provide a method of monitoring and controlling online distribution system for products recorded on storage media.

It is yet another object of the present invention to improve the distribution of products to consumers by bringing the convenience of electronic banking closer to locations frequented by consumers.

SUMMARY OF THE INVENTION

The present invention is a network of at least one server and multiple dispensing clients. The clients are dispensing machines electronically linked to the server for dispensing products recorded on storage media. Consumers preview representative segments of items from a graphic user interface before selecting and paying for them via on site electronic banking inputs. Items are dispensed to consumers if they are available from the dispensing machines' inventory. Otherwise, items on order are forwarded to consumers from a central distribution facility. The server also monitors the level of inventory of remote dispensing machines, while ensuring the integrity of the distribution network against breakdown and abuse. The information captured from the dispensing clients are stored by the server.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective, elevational view of a machine for dispensing recorded on storage media according to an embodiment of the present invention.

Fig. 2 is a cutaway, perspective, elevational view of the storage magazine and the dispensing mechanism of the dispensing machine as illustrated in Fig. 1.

Fig. 3A and 3B are cross sectional, elevational views of the dispensing mechanism and the input device for the dispensing station according to sections A - A and B - B shown respectively in Fig. 2.

Fig. 4 shows a network architecture for linking multiple dispensing stations with at least one server for implementing the online dispensing system of the present invention.

Fig. 5 is a flowchart showing a process for selecting, sampling and purchasing products using the online dispensing system of the present invention.

Fig. 6 is a possible graphic user interface through which customers sample and purchase recorded on storage media with the online dispensing system according to an embodiment shown in Fig. 1.

Fig. 7 is a possible graphic user interface for the remote server through which the proprietor monitors and controls a network of dispensing stations.

DESCRIPTION OF THE EMBODIMENT OF THE INVENTION

A system for dispensing recorded on storage media in an online environment is described. In the following description, numerous specific details are set forth such as dispensing mechanism and client-server communication linkage in order to provide a thorough understanding of the present invention. It will be obvious to one skilled in the art that the present invention may be practiced without these specific details. In other instances, well-known parts such as those involved with online cashing machines are not shown in order not to obscure the present invention.

Notation and Nomenclature

The detailed description with respect to the online distribution system is presented partially in terms of algorithm and symbolic representation upon operation on data bits within the computer memory. These algorithmic descriptions and representations are the means used by those skilled in the art in the data processing arts to most effectively convey the substance of their work to others skilled in the art.

An algorithm is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. These steps are those require physical manipulation of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, and otherwise manipulated. In this case, the physical quantities are voltage signals which correspond to the production information. It proves convenient at times, principally for reason of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers or the like. It should be borne in mind,

however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities.

Further, the manipulations performed are often referred to in terms such as adding or comparing, which are commonly associated with the mental operations performed by a human operator. No such capability of a human operator is necessary, or desirable. In most cases, in any of the operations described herein which form part of the present invention; the operations are machine operations. Useful machines for performing the operations of the present invention include general purpose digital computers or similar devices such as digital signal processors. In all cases, it should be borne in mind that there is a distinction between the method operation in operating a computer and the method of computation itself. The present invention relates to method steps for operating a computer in processing product distribution information to generate other desired physical signals.

The present invention also relates to an apparatus for performing these operations. This apparatus may be specially constructed for the required purpose or it may comprise a general purpose computer as selectively activated or reconfigured by a computer program stores in the computer. The algorithms presented herein are not inherently related to any particular computer or other apparatus. In particular, various general purpose machines may be used with programs written in accordance with the teachings herein, or it may prove more convenient to construct specialized apparatus such as digital signal processor to perform the required method steps. The required structure for a variety of these machines would appear from the description given below.

Fig. 1 is a perspective, elevational view of a machine for dispensing products recorded on storage media according to an embodiment of the present invention. A dispensing station or machine 5 dispenses products recorded on storage media such as Compact Disc (CD), cassette, CD-ROM, diskettes or Digital Compact Discs (DCD). The dispensing station 5 comprises a housing 10, a display area 15, a graphic display 20, an electronic payment device 25, a cash payment device 30, a magnetic card reader 35, and a dispensing bin 40. The housing 10 is fabricated from any durable material such as metal sheet or sturdy boards for protecting the interior of the dispensing from the elements. At least one portion, and preferably the upper portion in line with an average person's line of sight, is the display area 15 which provides space for advertisement. The display area 15 may be used by either the manufacturer of the dispensor or the supplier of the products which the station dispenses. The graphic display 20 is part of a processor system for receiving inputs from consumers or displaying information from the online distribution system of the present invention.

Again in Fig. 1, the electronic payment device 25 can be an remote credit card machine for consumers to settle payment by charging to one credit card. At the same time, the cash payment device 30 can be a machine for receiving cash payment - either in bills or coins. Furthermore, the electronic payment device 35 can also be direct debiting station such as NETS or equivalent facility for consumers to settle payment by debiting one bank account. It can be seen that the dispensing station 5 offers a variety of payment modes for consumers, thus making it easy for them purchase products recorded on storage media around the clock and at their convenience. As shall be described in greater details in Figs. 2 and 3, there

is a dispensing bin from where the selected products may be dispensed to the consumer after he pays for it.

Fig. 2 is a cutaway, perspective, elevational view of the storage magazine and the dispensing mechanism of the dispensing machine as illustrated in Fig. 1. The dispensing mechanism 50 of the dispensing machine 5 comprises the dispensing bin 40, a plurality of storage magazine 55, a plurality of transport system 60, and a plurality of buffer flaps 63. The dispensing mechanism 50 is preferably fitted on a drawer 70 whose sliding mechanism (not shown in Fig. 2) allows the installation professional or maintenance crew to service it conveniently. The storage magazine 55 is a repository of products to be dispensed; the bottom most product 65 is flushed with the transport system 60. In the preferred embodiment of the present invention, the transport system 60 is a conveyor belt which is actuated by a motor 62 to moving the bottom most product 65 towards the inclining buffer flap 63. From the flap, the product 65 drop into the opening of the dispensing bin 40. Here, the paying consumer picks up the products.

Fig. 3A and 3B are cross sectional, elevational views of the dispensing mechanism and the input device for the dispensing station according to sections A - A and B - B shown respectively in Fig 2. In the Fig. 3A, the dispensing mechanism 50 is shown disposed within the housing 10. The output from the transport system 60 (not shown in Fig. 3A but in Fig. 2) leads into the plurality of buffer flaps 63. On the inner surfaces housing fronting the dispensing mechanism are also a plurality of buffer flaps 63 spaced in such a way so as to minimize the dispensed product's impact of fall into the dispensing bin 40. The buffer flaps 63 can be made out of any semi-rigid material such as rubber, silicon, or synthetic resin.

Referring again to Fig. 3B, the other half of the interior of the housing 10 shows the graphic display 20 and a cash validator 75 being coupled to an on site controller 80. The on site controller 80 is among multiple clients of a remote server (not shown in Fig. 3B but in Fig. 4) for communicating with consumers and also monitoring the online distribution system of the present invention. As will be described in further details in connection with Fig. 6, the on site controller 80 and the graphic display 20 communicates with consumers the selection of products available either locally from the dispensing station 5 or remotely from a central distribution facility. The cash validator 75 receives and validates from consumers bills or coins.

While Figs. 1 - 3 describes graphically details of the client dispensing stations, Figs 4 and 7 describe the structure and functions of the server which controls the online distribution system of the present invention. Fig. 4 shows a network architecture for linking multiple dispensing stations with at least one server 100 for implementing the online dispensing system of the present invention. The server 100 maintains communication links 90 with multiple client dispensing stations 85 and 95. The communication link 90 comprises a network which is implemented either through telephone lines and modems, wireless communication links, optical communication links or even satellite links. The process under which the server 100 supervises the network of dispensing stations 85 and 95 will next be described.

Fig. 7 is a example of a graphic user interface for the remote server through which the proprietor monitors and controls a network of dispensing stations. The interface 136 illustrates that the server maintains communication link with each and every dispensing station - in this case, station 01 138 at Toa Payoh location 140 is currently on line. At least three categories of

information regarding the dispensing station at location 140 is available for the proprietor to query and monitor: (1) individual title information 142 of products, (2) inventory information 144, and (3) service and maintenance information 146. Individual title information 142 captures the demand for certain categories of products being offered for sale. This information is valuable for the proprietor as it enables him or her to know which types of products are popular. Hence, the proprietor should reorder such categories of products before the inventory 144 is depleted. Information such as 142 and 144 is real time marketing information which enables retailers to deliver products to consumers in a timely manner. As such, the online distribution system for products recorded on storage media is more efficient and effective than traditional methods of distributing such products. At the same time, the online distribution system of the present invention also facilitates the accounting of royalty and licensing fees due the authors or owners of the intellectual property rights in the products.

Again in Fig. 7, the service and maintenance information 146 available through the interface 136 on the server 100 is illustrative of the control over the network as well as the client dispensing stations 85 and 95. Appropriate sensors and diagnostics are built into each dispensing station for informing the server when the dispensing station requires service or maintenance or emergency repair. While the online distribution system of the present invention economises on the personnel for administrating the system, it is important that there are means to alert the system when the dispensing station is malfunctioning.

One of the ways the online distribution system minimizes down time of the dispensing station is through the built-in diagnostics in the software of the

controller 80 at the dispensing station. Fig. 5 is a flowchart showing a process for selecting, sampling and purchasing products using the online dispensing system of the present invention. The process of the controller 80 commences in step 102. Next, a diagnostic program mentioned in the previous paragraph is activated; the diagnostic program checks major components of the dispensing station for malfunction or tampering. If proper functioning of the dispensing station is verified, then the controller 80 determines whether there is any request for service. If none, it continues to monitor for such request. Otherwise, in step 108 the controller 80 determines whether the consumer wishes to sample a representative segment of the product or to select a product. At this juncture, the consumer is usually presented with a interface or menu such as the one illustrated in Fig. 6.

Here, the customers is presented at the display 20 with a menu 120 having sub menus 122 - 134 for the consumer to sample or to purchase products recorded on storage media. Sub menu 122 permits the consumer to select the category of products. In this example, the products are CD titles. Another sub menu 124 displays the individual titles of a CD, while menu 125 lists the individual recording under selected CD title. Once the title of a CD is selected, pricing and inventory information are also displayed in locations 123 and 127 respectively. Buttons 128 and 134 permit consumer to view the CD cover and sample a representative segment of the individual recording respectively, and buttons 126, 128 and 132 allows consumer to make other selections. Finally button 130 enables consumer to pay for the product by a variety of means.

While the present invention has been described particularly with reference to FIGS. 1 to 7 with emphasis on a system for distributing products in an online environment, it should be understood that the figures are for illustration only and should not be taken limitation on the invention. In addition, it is clear that the method and apparatus of the present invention has utility in many applications where efficient distribution of goods and services is required. It is contemplated that many changes and modifications may be made by one of ordinary skill in the art without departing from the spirit and the scope of the invention as described.

CLAIMS

1. An online system for distributing products recorded on storage media, said system comprising:

a plurality of dispensing stations for dispensing said products upon receiving inputs through a controller, each said dispensing stations further comprising at least one magazine for storing said products, a transport system for conveying said products to consumers, and electronic payment means for verifying and receiving payment from consumers; and

at least one server having a communication link with said plurality of dispensing stations for monitoring the operation of said dispensing station, said server further retrieving operational and statistical information from said plurality of dispensing station,

whereby said system delivers to consumers products recorded on storage media efficiently, economically and effectively.

2. The system as in claim 1 wherein storage media comprises magnetic tape, magnetic disc, diskettes, Compact Disc, CD-ROM, optical disc and digital Compact Disc.

3. The system as in claim 1 wherein said controller comprises a microprocessor coupled to an input display device.

4. The controller as in claim 3 wherein said input display device is a monitor.

5. The controller as in claim 3 wherein said input display device is a keypad.

6. The system as in claim 1 wherein said electronic payment means comprises a magnetic card reader linked with a financial account.

7. The system as in claim 1 wherein said electronic payment means comprises a cash validator.

8. The system as in claim 1 wherein said communication link is via at least a pair of modems.

9. The system as in claim 1 wherein said communication link is via a computer network.

10. The system as in claim 1 wherein said communication link is via a optical network

11. The system as in claim 1 wherein said communication link is via wireless network

12. The system as in claim 1 wherein said wireless network is a satellite link.

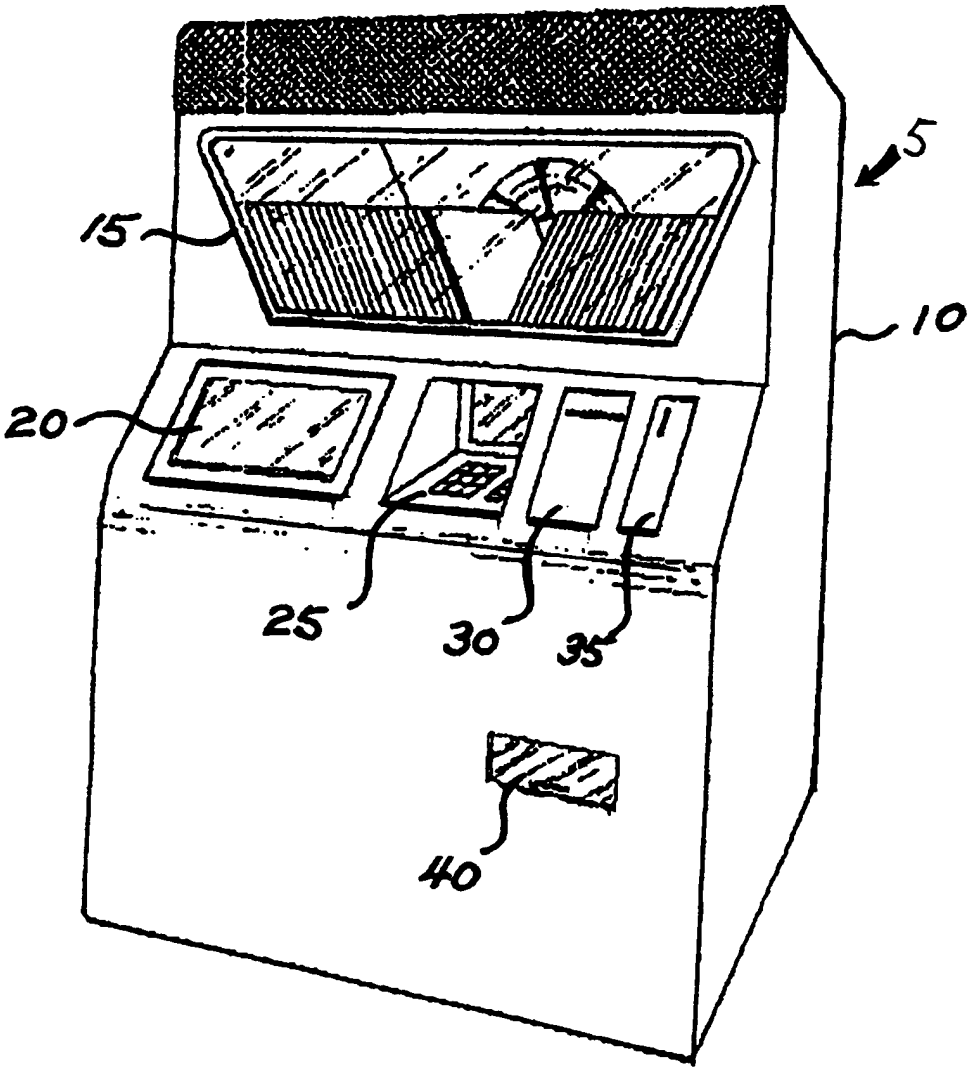


Fig. 1

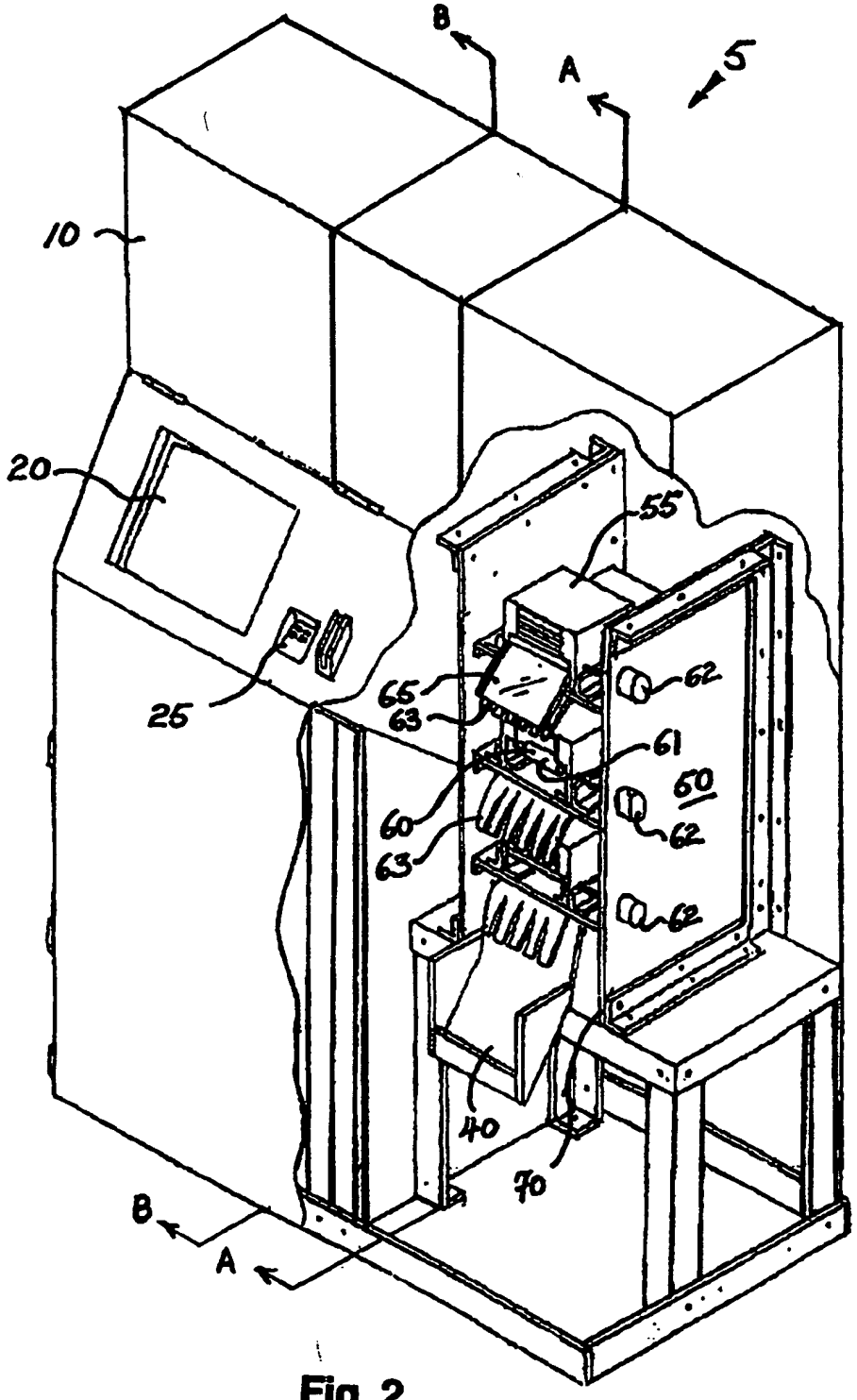


Fig. 2

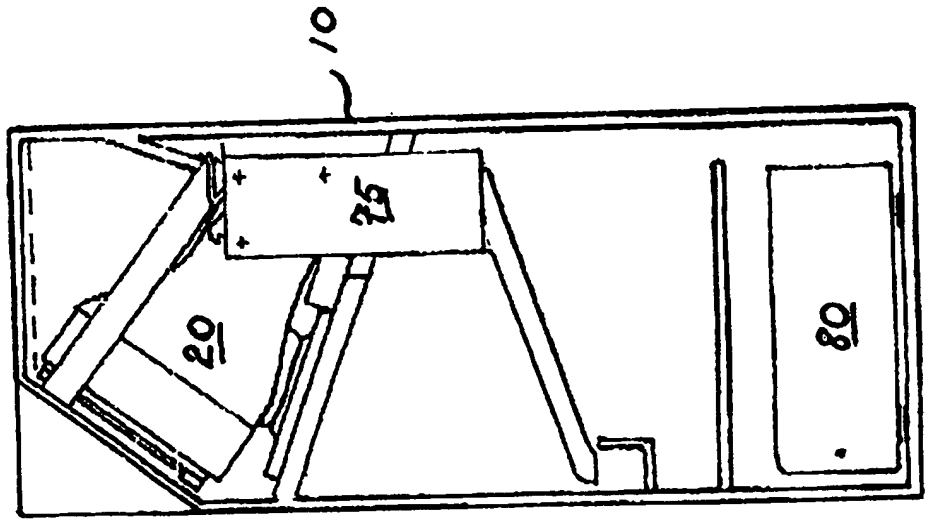


Fig. 3B

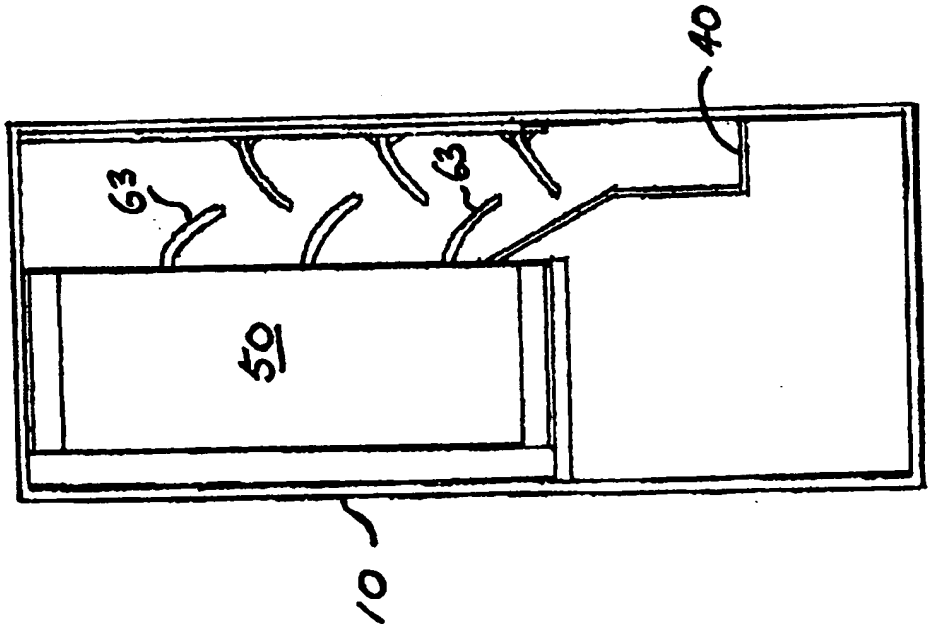


Fig. 3A

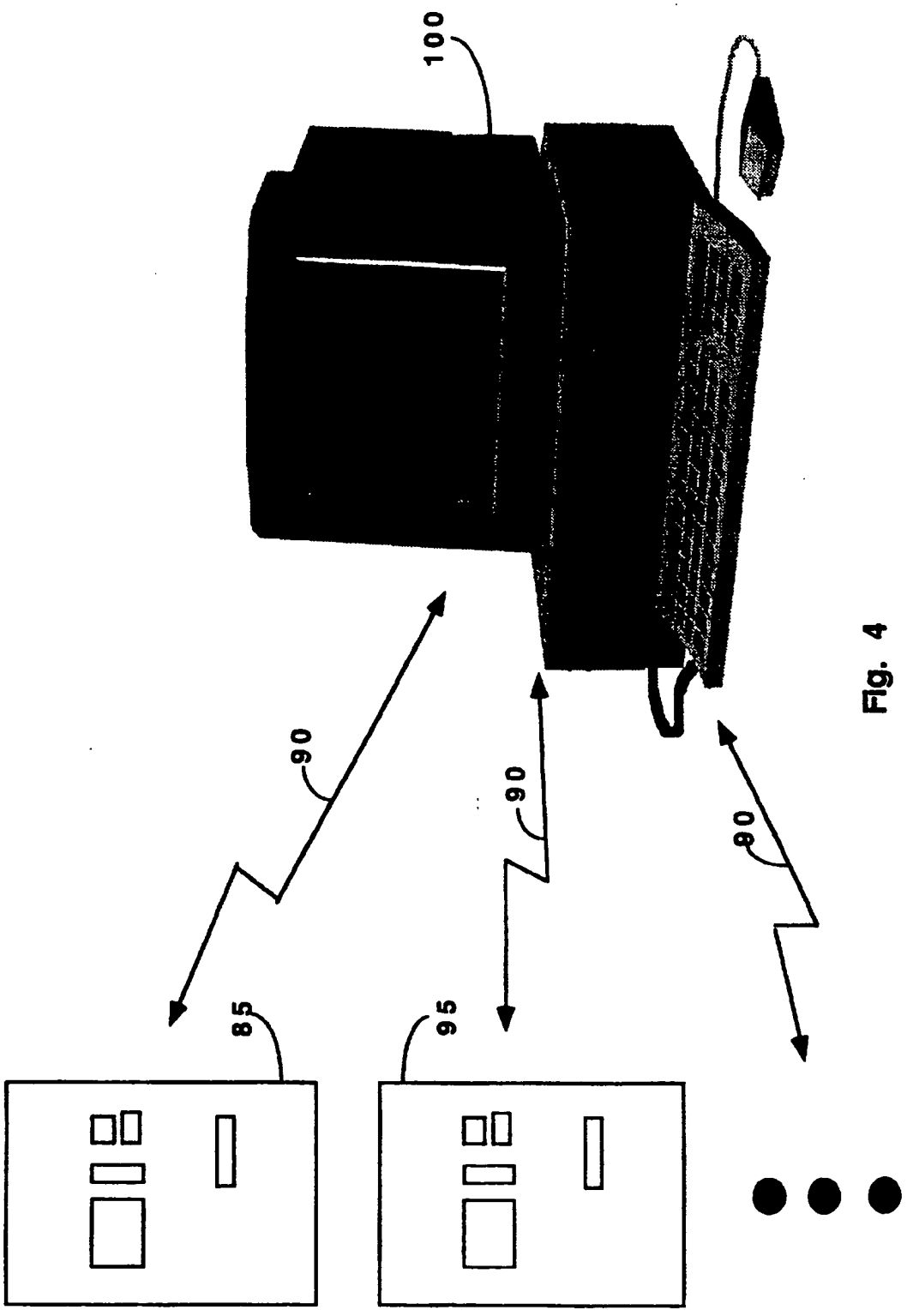
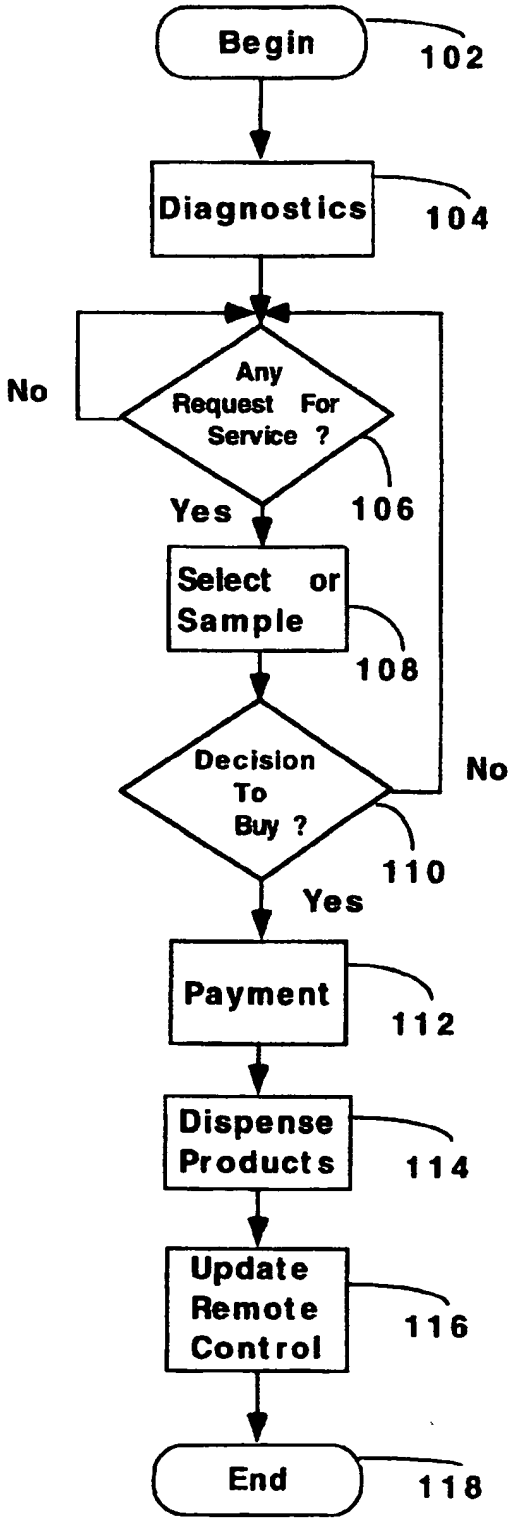


Fig. 4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No
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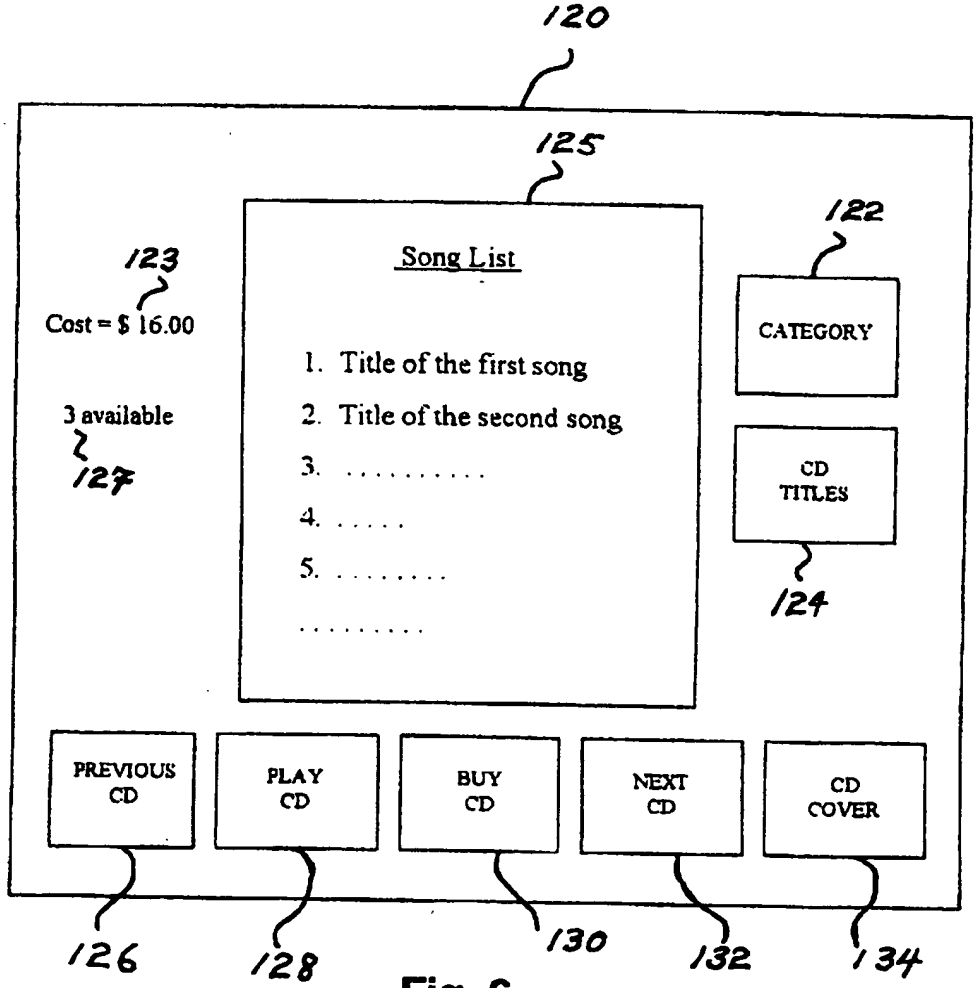
Update Remote Control
116
End
118

Fig. 5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125
122
123
Song List
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2. Title of the second song
3. .....
4. .....
5. .....
.....
CATEGORY
3 available
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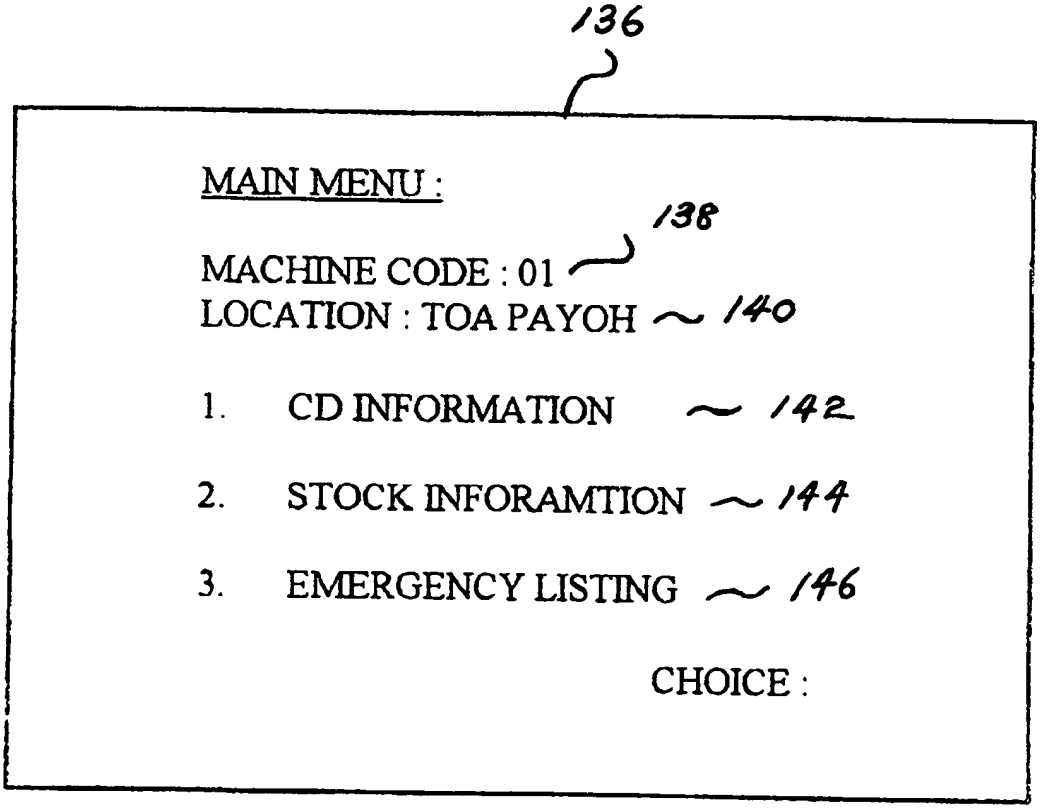
124
PREVIOUS CD
PLAY CD
BUY CD
NEXT CD
CD COVER
126
128
130
132
134

Fig. 6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138
MACHINE CODE : 01
LOCATION : TOA PAYOH
140
1. CD INFORMATION
142
2. STOCK INFORAMTION
144
3. EMERGENCY LISTING
146
CHOICE :

Fig. 7

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/SG 97/00012

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: G07F 11/00, G06F 17/60 // G06F 19/00, 153:00

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5303844 A (MUEHLBERGER) 19 April 1994 Column 1, lines 24 - column 2, line 40; column 5, line 18 - column 6, line 3; column 5, lines 4-7; figures 1-7	1-6, 8-12
X	FR 2685523 A (MONETEL SA) 25 June 1993 Page 17, lines 15-17; page 1, lines 11-13; page 3, lines 11 - page 5,line 17; figure 1	1-12
X	EP 351335 A (SOCIETE D'ETUDES D'INVESTISSEMENTS POUR LES AFFAIRES - SEIA) 17 January 1990 Abstract; column 1, line 50 - column 2, line 49; column 3, line 31 - column 4, line 17; Figures 1, 2	1, 3-6, 8-12

[X] Further documents are listed in the continuation of Box C

[X] See patent family annex

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Date of the actual completion of the international search
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INTERNATIONAL SEARCH REPORT

International Application No.
PCT/SG 97/00012

C (Continuation) **DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2143662 A (ESSEX ENGINEERING COMPANY) 13 February 1985 Abstract; figure 1	
A	US 4766548 A (CEDRONE et al) 23 August 1988 Column 1, line 60 - column 2, line 2; column 2, lines 19-48; column 3, lines 17-21.	
A	FR 2712104 A (CHABRERIE) 12 May 1995 Abstract; figures 1, 2	

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/SG 97/00012

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	5303844	EP	572119	JP	6-052429		
FR	2685523	NONE					
EP	351335	FR	2634302				
GB	2143662	AU	30515/84	CA	1218439	DE	3405042
		ZA	8405463				
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		EP	296179	FI	884031	JP	1-113863
		NO	883912	SU	1836688	WO	88/05194
FR	2712104	NONE					

END OF ANNEX